Disorders of Thrombosis and Hemostasis in Pregnancy

A Guide to Management

Second Edition

Hannah Cohen
Patrick O’Brien Editors

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Disorders of Thrombosis and Hemostasis in Pregnancy
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Second Edition
Preface to the Second Edition

The first edition of this book quickly established itself as an invaluable resource for those caring for women during pregnancy and fertility treatment. This second edition expands its scope, including new chapters on anticoagulants and antiplatelet agents, cerebrovascular disease, pre-eclampsia, obstetric haemorrhage, thrombotic microangiopathies, paroxysmal nocturnal haemoglobinuria and analgesia and anaesthesia in women with haemostatic or thrombotic disorders in pregnancy. It also updates the previous content with the most recent research evidence. The book provides a contemporary and comprehensive guide to the management of haematological disorders in pregnancy. It covers a wide range of important clinical disorders that are associated with a potentially significant risk of morbidity and mortality in both the mother and the baby. The focus in each chapter is on authoritative, practical clinical advice, in the context of the available scientific evidence, on the management of women with both common and rare disorders of thrombosis and haemostasis in pregnancy. Included also are disorders where the management of thrombotic aspects are highly relevant, such as cardiac disorders, haemoglobinopathies and assisted conception. In addition, chapters include key learning points, and, when called for, case studies that highlight the pertinent clinical aspects of the topics covered. It is well recognized that in this population, many recommendations are based on observational studies and extrapolation from other populations rather than on appropriately designed clinical trials, and this is reflected in some degree of variation in the opinions expressed in different chapters. The approach is multidisciplinary – the authorship brings together wide-ranging expertise in haematology, obstetrics and gynaecology, obstetric medicine, cardiology, neonatology and assisted conception, resulting in a unique and clinically indispensable resource. This book will therefore be of interest and value to all those involved in the management of women with disorders of thrombosis and haemostasis in pregnancy and fertility treatment – haematologists, obstetricians and gynaecologists, midwives and obstetric and general physicians as well as neonatologists at both consultant and trainee level.

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Hemostatic Changes in Normal Pregnancy

Carolyn M. Millar and Michael Laffan

Abstract

Hemostasis represents a balance between pro- and anti-coagulant processes, with variations in this balance determining the net outcome. Significant physiological changes during pregnancy result in a hypercoagulable and hypofibrinolytic state that serves to protect the mother from bleeding complications at the time of placental separation. This chapter describes the effects of pregnancy on parameters of primary hemostasis, coagulation factors, anticoagulant pathways and the fibrinolytic system.

Keywords

Hemostasis • Physiological • Pregnancy • Hypercoagulability • Hypofibrinolysis

1.1 Introduction

Under normal conditions, blood flows within the vascular system, transporting oxygen, nutrients, and hormonal information around the body and removing metabolic waste. The confinement of circulating blood to the vascular bed and maintenance of blood fluidity are dependent upon a complex hemostatic system that involves interaction between the vasculature, platelets, coagulation factors, and the fibrinolytic system. Such interaction enables the stimulation of coagulation following injury, limits the extent of the response to the area of injury, and initiates the eventual breakdown of the clot as part of the process of healing. Thus, hemostasis may be viewed as a delicate balance between the pro- and anticoagulant processes, with variations in this balance determining the net outcome.

As well as a significant expansion in plasma volume, normal pregnancy is accompanied by major changes in the maternal hemostatic system, most likely mediated by hormonal influences, the net effect of which is to create a state of hypercoagulability and hypofibrinolysis. Together with the stemming of placental blood flow by myometrial contraction, these changes...